

A

A. Manta ray gill plates are uniform brown/black (sometimes white) in colour and usually much larger than their mobula ray counterparts.

Mobula ray gill plates are generally smaller, often bi-coloured, or with separated bristled filament tips.

B. Sicklefin devil ray—*Mobula tarapacana*

C. Spinetail devil ray— *Mobula japanica*

B

C

Conclusions

Manta ray gill plates can easily be distinguished from the traded mobula ray species' gill plates using this simple visual ID Guide.

The size, colour patterning, and filament edging of the gill plates can be used as an effective and easy indicator to determine the species of origin.

Thanks

The Manta Trust Team, The Manta Ray of Hope Team, Prof. Callum Roberts, Dr. Julie Hawkins, Dr. Giuseppe Notarbartolo di Sciara, Sarah Fowler

Funding Sources

The Pew Environment Group, The Save Our Seas Foundation



Field Identification Guide

of the Prebranchial Appendages (Gill Plates) of Mobulid Rays for Law Enforcement and Trade Monitoring Applications



The genus *Manta*, which includes the oceanic manta ray (*Manta birostris*) and the reef manta ray (*Manta alfredi*), are listed on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The genus *Mobula* consists of nine species that are closely related to manta rays. These species are being proposed for listing on Appendix II of CITES. Together, the manta and mobula rays comprise the family of Mobulidae and are known as the “mobulid rays.”

Mobulid rays are found throughout the world’s tropical and temperate oceans. They are large animals with few natural predators. The biological characteristics of mobulid rays including their late maturity, long gestation periods, and low fecundity (giving birth to one single pup), make them highly vulnerable to directed or bycatch fisheries. Both species of manta rays are categorised as Vulnerable by the IUCN Red List of Threatened Species™.



Effective enforcement and monitoring of international trade will be enhanced through the ability to easily distinguish between the gill plates of the mobula rays and those of manta rays.

This guide is intended to help fisheries, enforcement, and customs personnel in the identification of mobulid gill plates. Definitive DNA tests are also available to confirm visual identification if needed for prosecution or verification purposes.

Prebranchial Appendages (Gill Plates)

All mobulid rays are filter feeders, using their mouths and modified gill plates to strain plankton and small fishes from the water. Each mobulid ray has five pairs of gill slits, each of which is encircled internally by a ring of feathery gill filaments known as prebranchial appendages or "gill plates."



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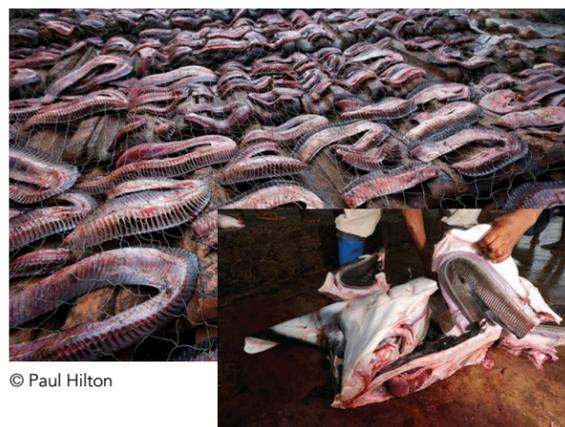
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A. Gill slit openings

B. Feathery prebranchial appendages encircle the gill slits inside the mouth of a mobulid ray.

Mobulid Ray Fisheries

The gill plates of manta and mobula rays are used in Asian medicine. Growing demand is driving a global fishery for these species. When the gill plates are removed from the dead animals, they are cut in half before being dried and then shipped to the point of sale.



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Gill Plate Trade

Gill plates from five different species of manta and mobula rays have been found in the gill plate trade. Gill plates from the two species of manta rays can be visually identified from the other mobula species.



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Gill plates from the sickle-fin devil ray (*Mobula tarapacana*) are known as "flower gills" in the gill plate trade.

Distinguishing Features

In general, mobula rays are much smaller than the mantas and can be distinguished by morphological differences in their mouths.

Mobula rays have a bottom jaw which is undercut, so that when their mouths are closed, the edge of the lower jaw rests much further back than the upper jaw (ventral). The manta ray's jaws are aligned evenly (terminal).

Is the mouth terminal?

YES

NO



Manta: terminal mouth



Mobula: ventral mouth

Gill Plate Features

There are three key features that can be used to easily identify each gill plate type:

1. Gill Plate Size
2. Gill Plate Colour
3. Gill Plate Filament Edging

1

Size: measured as the total length of the traded gill plate



30cm Ruler

2

Colour: bicoloured (below) or uniform (above)



30cm Ruler

3

Filament Edging: smooth (above) or separated/bristled (below)



Manta Ray Gill Plates

1. Gill Plate Size = Large (more than 30cm)
2. Gill Plate Colour = Uniform brown/black (sometimes white)
3. Filament Edging = Smooth



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Filament edge is smooth



30cm Ruler

Key to Visual Identification of Traded Mobulid Ray Gill Plates

Question 1:

Is the gill plate longer than 30cm and uniform dark brown/black in coloration?

YES = Manta

NO = Go to Question 2

Question 2:

Does the gill plate have central or white edges and/or separated bristled filament tips?

YES = Mobula

NO = Manta

Mobula



Gill Plate Images © Paul Hilton

Manta

